

Abstract of the Disclosure

An active endoscopic system is disclosed containing an electromagnetic radiation system located at the distal end of the endoscopic device allowing for variable intensity application of desired wavelengths in the application of PhotoDynamic Therapy (PDT) over a broad area. The power sources are varied according to the needs of a specific application. Various attachments and configurations may be used to enhance performance of a desired application, including but not limited to multi-balloon systems for centering the apparatus or limiting the treatment area, fiber optics for directly viewing the treatment area, vacuum systems for waste removal, tubes for delivering aminolevulinic acid (ALA) or other photosensitizers, and other fiber optics for illumination of treatment area. A preferred embodiment for PDT employs a multitude of low wattage diodes at the distal end of the endoscope, a scattering glass, cooling channel, external cooling unit, an inflatable balloon with a reflective surface and a tube connected to an external pump for the delivery and removal of photosensitizers. Each diode is selected to emit the respective frequency needed to activate the selected photosensitizer. Alternatively, a range of diodes may be selected to maximize the activation of the photosensitizer. Other embodiments include a chemiluminescent light source at the distal end of the endoscope. Other electromagnetic sources include microwave or radio frequency devices. The prime benefit of this system is the placement of the radiation source at the distal end of the device to bring the light source directly to the desired site.